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Prevalence of burnout syndrome and its associated factors among undergraduate, graduate and postgraduate dental students in a private University, Riyadh, Saudi Arabia

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ABSTRACT

Background/Introduction: Assessment of burnout and its relationship to sociodemographic characteristics among undergraduate, graduate, and postgraduate dental students is essential to study students' academic performance. **Objectives:** This research aimed to assess the frequency of Burnout Syndrome among undergraduates, graduates, and postgraduate dental students of a private university. **Materials and method:** The present study is a descriptive cross-sectional survey conducted among conveniently selected 406 dental students from a private university. The study subjects included preclinical (120), clinical (174), intern (71), and postgraduates (41) dental students of Riyadh Elm University, Riyadh, Saudi Arabia. **Result:** The interested participants were given a self-administered, structured questionnaire with ten sociodemographic characteristics and 15 Maslach Burnout Inventory Student Survey (MBI-SS) questions in Arabic and English. Statistical analysis included frequency distribution, mean and standard deviation values. In addition, an independent t-test, one-way analysis of Variance (ANOVA) followed by Turkey's multiple comparison tests, were applied to the data. The level of significance was set at a p-value < 0.05. **Conclusion:** The increased academic burden and the cumulative stress of clinical requirements may have resulted in a higher level of burnout among clinical level students than preclinical dental students.

Keywords: Burnout, dental students, Maslach burnout inventory



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1. INTRODUCTION

Herbert Freudenberg used the term "burnout" in the mid-1970s to describe the emotional exhaustion and lack of motivation and commitment experienced by volunteers working in alternative care environments (Maslach et al., 1996). Burnout is a syndrome of emotional exhaustion and cynicism or self-detachment and reduced personal achievement that frequently occurs among individuals who do 'people work of some kind (Maslach and Jackson 1981). A vital aspect of burnout syndrome is increased feelings of emotional fatigue. As their emotional resources are drained, workers feel they can no longer bear themselves at a psychological level. The formation of unpleasant, cynical attitudes and feelings about oneself is the second component. Such adverse reactions may be related to the feeling of emotional depletion. The third aspect includes poor self-evaluation, particularly about working with clients. Workers feel unhappy about themselves and dissatisfied with their accomplishments on the job. Burnout appears to be associated with various self-reported indicators of personal suffering, such as physical tiredness, sleeplessness, increased use of alcohol and drugs, and marriage and family issues. Multiple stressors in the work environment, such as workload and ambiguity, were related to burnout (Maslach and Jackson, 1981; Alotaybi et al., 2021; Alothman et al., 2021). Moreover, stress and burnout syndrome showed a relationship with smoking (Hernández et al., 2021).

Burnout in students is defined as being tired by study expectations, having a cynical and disconnected attitude toward one's studies, and feeling inept as a student. Therefore, the (MBI-SS) was designed to measure the three-factor structure of burnout among students. The psychometric analyses of the scale demonstrated high reliability and validity to measure burnout (Schaufeli et al., 2002). In the past decade, various studies on student burnout have been carried out in different countries (Al-Mobeeriek and Al-Mobeeriek, 2011; Al-Omari et al., 2020; Atalayin et al., 2015; Ghafoor et al., 2018; Hu and Schaufeli, 2009; Liu et al., 2018; Mafla et al., 2015; Montero-Marin et al., 2011; Obregon et al., 2020; Rostami et al., 2014). However, few studies were reported among private hospitals' healthcare providers and practicing dentists in Saudi Arabia (Campos et al., 2012).

However, there is a scarcity of data on burnout syndrome among dentistry students in Saudi Arabia. Identifying this condition at an early stage among dental students may help adequately plan and implement preventive measures and coping strategies to improve their quality of life and educational accomplishment. Therefore, the purpose of the present study is to characterize the incidence of burnout syndrome and its relationship with sociodemographic factors in a sample of preclinical, clinical, interns/graduates, and postgraduate dental students of a private university in Riyadh, Saudi Arabia.

2. MATERIALS AND METHODS

Study design

A descriptive cross-sectional study was performed among dental students of Riyadh Elm University in Riyadh, Saudi Arabia. This study was carried out from February 2021 to May 2021.

Study sample

This study comprised male and female dental students in preclinical phases (1st, 2nd, and 3rd year) and clinical phases (4th, 5th, and 6th year), graduates/Interns, and postgraduate dental students. A minimum required sample of (N=306) was calculated based on the margin of error of 5%, a 95% confidence level, a population size of 1500 students with a response distribution of 50%. A convenient sampling methodology was employed to select the study participants from various categories.

Inclusion and exclusion criteria

All the preclinical, clinical, graduates/interns, and postgraduate dental students studying in the dentistry college were asked to participate in the research. Participation in the survey was voluntary. However, students who were not willing to participate and those incomplete surveys were removed from the analysis.

Instruments and Variables

The survey questionnaire used for the study was written in both local language Arabic and also in English. The questionnaire consisted of two parts: The first part contained questions on sociodemographic details such as age, gender, year of study, marital status, order of preference of the course, financial support, family support, accommodation, use of medications, and consideration of quitting the course. The second part included Maslach Burnout Inventory-Student Survey (MBI-SS) designed by Schaufeli et al., (2002) to measure students' burnout levels. It contained 15 items that evaluated the components of emotional exhaustion (5 items), cynicism (4 items), and academic efficacy (6 items). Items were scored according to a reported frequency on a 7-point Likert scale

with categories ranging from 0-6 (never) to every day). Students who scored high in emotional exhaustion and cynicism and low in professional efficacy subscales were graded as having an increased risk of burnout.

Ethical Clearance

The willing and participating students filled the informed consent form, and the ethical clearance was obtained from the research center of Riyadh Elm University, Riyadh, Saudi Arabia, with the IRB approval number"FRP/2021/1333/397/388." The confidentiality of the information was assured to the study participants, and data was collected anonymously without asking for personal identifier information.

Validity and reliability

A pilot survey was performed to test the validity of the questionnaire. Fifty volunteered participants received an MBI-SS questionnaire to analyze the intraclass correlation coefficient (q) with 95% confidence intervals, which was found satisfactory. In addition, the reliability of the questionnaire was estimated using Cronbach's alpha coefficient ($\alpha=0.85$).

Questionnaire administration

An online version of the questionnaire was prepared using Google forms. In addition, the student's affairs office was communicated to email the questionnaire link to all the students in the college of dentistry. It took 5-7 minutes to fill the online survey. Finally, all the collected data was downloaded from google drive and analyzed. The Checklist for Reporting Results of Internet E-Surveys (CHERRIES) was followed in this study.

Statistical Analysis

The online survey data was collected, compiled, and analyzed. A Chi-square test and Fisher's tests were applied to find the relationship between demographic variables and burnout. Mean, standard deviation values of components of burnout scale were calculated and compared across different demographic variables. An independent t-test, ANOVA followed by Turkey's multiple comparison tests, were applied to the data. Statistical analysis was done using IBM- SPSS Version 25 (Armonk, NY: USA). A *p*-value of <0.05 was considered statistically significant.

3. RESULTS

Demographic characteristics

A total of 406 participants responded to the questionnaire. Most of the study subjects were females (n=247) than males, aged 23-27 years. The study included about 120(29.6%) undergraduate preclinical, 174 (42.9%) clinical, 71(17.5%) and 41 (10.1%) postgraduate dental students. A majority (69.5%) of the students lived with their families, while74 (18.2%) lived alone in a hostel and 12.3% with their friends. Dentistry was the first program for 49% of the dental students, whereas; it was the second and third choice for others. About 70.7% of the student has received their financial support for studies from families. Almost 32.5% of the dental students opted for taking medication to reduce stress. However, 48% of them had sometimes thought of leaving the course. Although most of the students (78.6%) reported excellent to good performance in their studies, 61.8% thought of quitting the programs (Table 1).

Table 1 Sociodemographic characteristics of the study participants			
Variables		n	%
Age	18-22 years	154	37.9%
	23-27 years	184	45.3%
	28-32 years	56	13.8%
	33-36 years	12	3.0%
Gender	Female	247	60.8%
	Male	159	39.2%
Marital status	Single	325	80.0%
	Married	49	12.1%
	Divorced	20	4.9%

	Others	12	3.0%
Level of the Course	Preclinical	120	29.6%
	Clinical	174	42.9%
	Interns/Graduates	71	17.5%
	Postgraduates	41	10.1%
Choice of the course	1st	199	49.0%
	2nd	110	27.1%
	3rd	51	12.6%
	4th	46	11.3%
Accommodation	Alone (hostel/apartment)	74	18.2%
	Family (home)	282	69.5%
	Friends (Hostel)	50	12.3%
Financial Support	Family	287	70.7%
	Scholarship grant	119	29.3%
Medication	Never	274	67.5%
	Sometimes	110	27.1%
	Always	22	5.4%
Performance in course	Excellent	114	28.1%
	Good	205	50.5%
	Bad	11	2.7%
	Average	76	18.7%
University facility	Very good	136	33.5%
	Bad	18	4.4%
	Average	188	46.3%
	Below average	64	15.8%
Quitting the course	Sometimes	195	48.0%
	Never	155	38.2%
	Always	56	13.8%

Prevalence of Burnout

The mean and standard deviation scores were employed to investigate the prevalence of burnout for each course level. The scores that were one standard deviation above and below the average were appointed as the groups representing low and high levels of burnout. Overall, Burnout syndrome was observed in 92.8% of dental students. In addition, about 60.09% of the students had emotional exhaustion, 47.2% of the students had cynicism, and 88.1 % reduced professional efficacy (RPE).

Burnout-gender relationship

The independent sample *t*-test was also used to determine gender differences for burnout. The statistical analysis showed that the average emotional exhaustion scores off male students (mean=17.28, SD=8.09) were higher than the average scores for male students (mean=11.18, SD=9.62) with a statistical significance ($p<0.001$). Male students had alower level of emotional exhaustion than females did. The *t*-test analyses indicated that cynicism scores for females (mean =9.23, SD=6.93) were higher than males (mean= 6.53, SD=6.44), and reduced professional efficacy scores also showed statistically significant differences concerning gender (Figure 1).

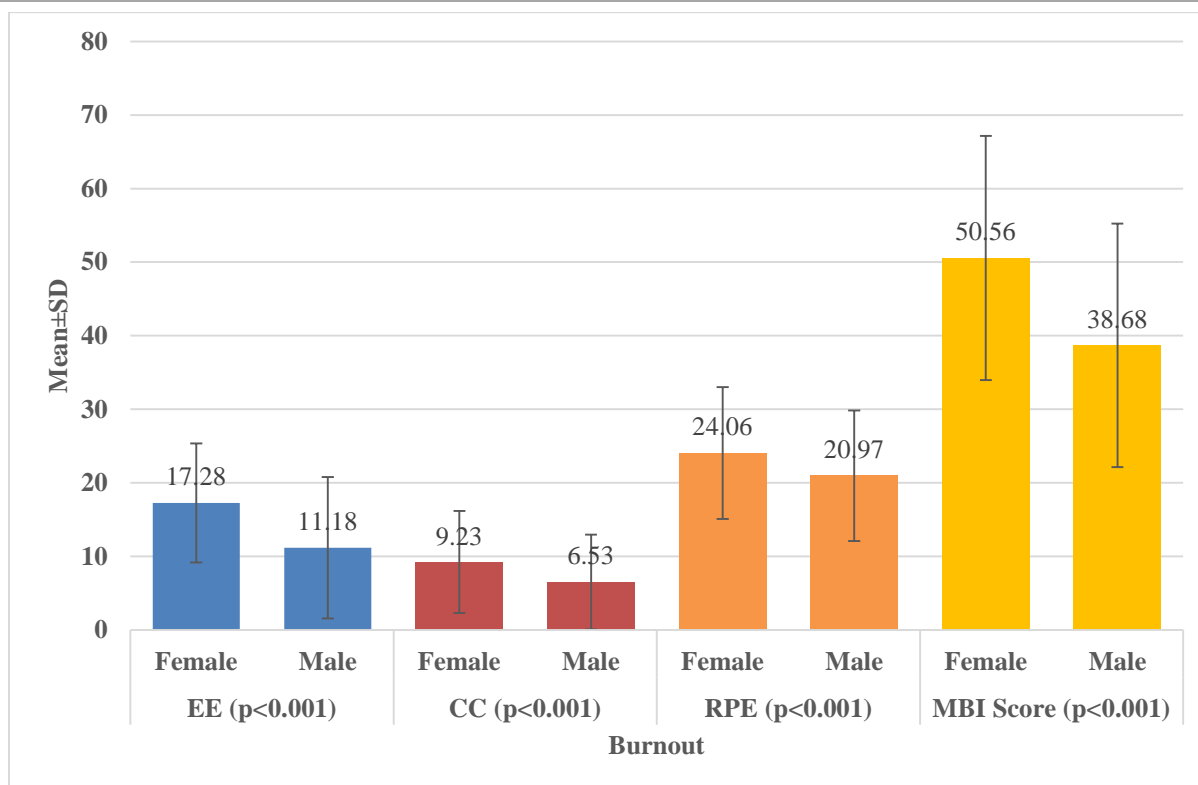


Figure 1 Comparisons Burnout inventory scores between gender by Independent t-test. Emotional Exhaustion (EE), Cynicism (CC), Reduced Professional Efficacy (RPE), Maslach Burnout Inventory (MBI)

Burnout-course level relationship

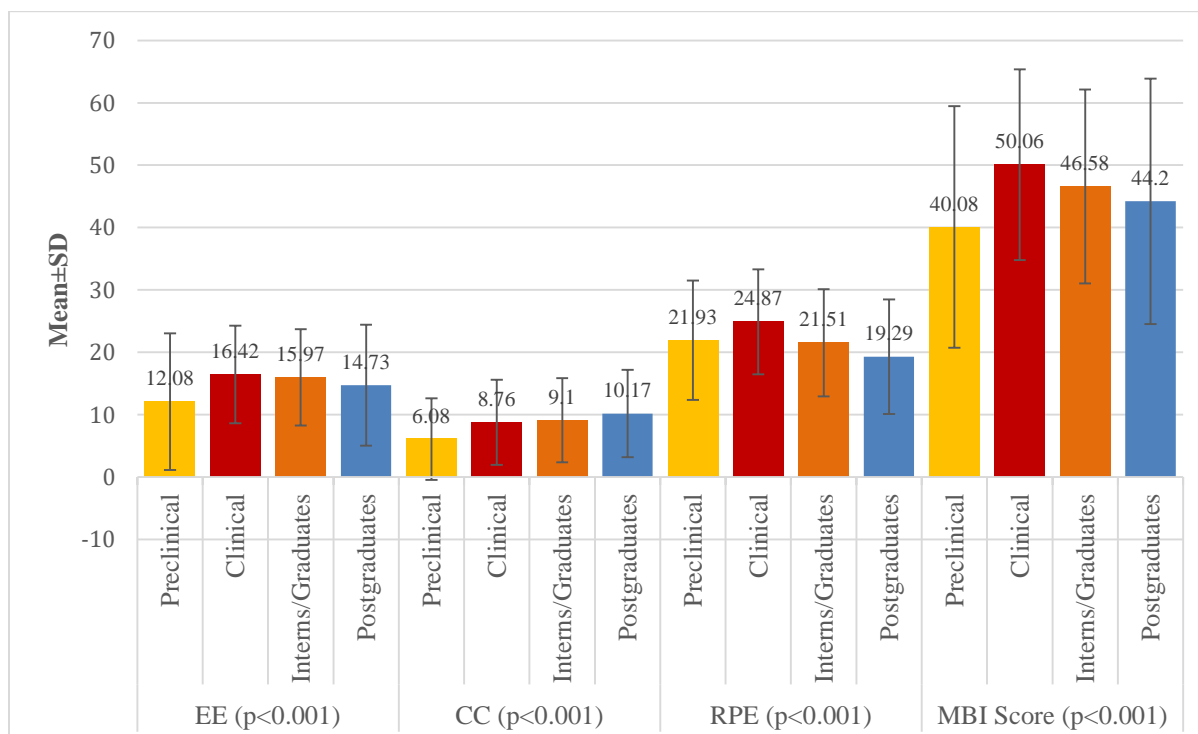


Figure 2 Comparisons of Burnout inventory scores among different levels by ANOVA test. Emotional Exhaustion (EE), Cynicism (CC), Reduced Professional Efficacy (RPE), Maslach Burnout Inventory (MBI)

Statistically significant differences were found between course level and sub-scales (emotional exhaustion, cynicism, and reduced academic efficacy) of MBI-Student Version. Emotional exhaustion (mean=16.42, SD=7.83) and reduced professional efficacy

(mean=24.87, SD=8.40) were rated high for clinical dental students and are at greater risk for burnout than preclinical, interns, and postgraduate dental students. The scores for cynicism (mean= 10.17, SD =6.99) were high for postgraduate dental students than others. There were statistically significant differences among clinical, preclinical, interns, and postgraduates for emotional exhaustion ($p=0.001$), cynicism ($p=0.001$), and decreased academic efficacy ($p<0.001$). The overall MBI burnout score (mean =50.06, SD=15.29) for clinical dental students was higher than others and was statistically significant ($p<0.001$) (Figure 2).

Association between sociodemographic variables and EE, CC, PE, and MBI-SS (Burnout) is displayed in (Table 2). The gender ($p<0.001$), marital status ($p=0.024$), use of medication ($p<0.001$), performance in the course ($p<0.001$), and university rating ($p<0.001$) by the students are significantly related to EE. On the other hand, all the socioeconomic variables considered in this study showed significant association with the CC ($p<0.05$) except for the accommodation of the students ($p=0.951$). Similarly, marital status ($p=0.022$), level of education ($p=0.009$), use of medication ($p=0.044$), and performance in the course ($p=0.001$) showed significant association with PE, while other socioeconomic variables failed to reveal any significant relationship ($p>0.05$). On the contrary, burnout did not significantly affect students' socioeconomic variables considered in this study.

Table 2 Association between burnout and sociodemographic variables (n=406)

Variables		EE			CC			PE			MBI-SS (Burnout)		
		No	Yes	p	No	Yes	p	No	Yes	p	No	Yes	p
		n	n		n	n		n	n		n	n	
Age	18-22 years	58	96	0.202	98	56	0.002	14	140	0.072	9	145	1
	23-27 years	69	115		85	99		20	164		10	174	
	28-32 years	29	27		28	28		11	45		3	53	
	33-36 years	6	6		3	9		3	9		0	12	
Gender	Female	76	171	<0.001	118	129	0.015	27	220	0.53	12	235	0.654
	Male	86	73		96	63		21	138		10	149	
Marital status	Single	123	202	0.024	171	154	0.048	33	292	0.022	16	309	0.503
	Married	28	21		32	17		6	43		4	45	
	Divorced	9	11		6	14		5	15		1	19	
	Others	2	10		5	7		4	8		1	11	
Level	Preclinical	58	62	0.07	81	39	0.001	19	101	0.009	10	110	0.068
	Clinical	61	113		85	89		11	163		4	170	
	Interns/Graduates	24	47		32	39		9	62		5	66	
	Postgraduates	19	22		16	25		9	32		3	38	
Option	1st	72	127	0.223	121	78	0.003	18	181	0.165	8	191	0.541
	2nd	49	61		54	56		13	97		7	103	
	3rd	25	26		24	27		8	43		4	47	
	4th	16	30		15	31		9	37		3	43	
Accommodation	Alone (hostel/apartment)	31	43	0.381	38	36	0.951	7	67	0.074	4	70	0.943
	with Family (home)	107	175		150	132		30	252		15	267	
	With friends (Hostel)	24	26		26	24		11	39		3	47	
Financial support	Family	108	179	0.15	141	146	0.029	31	256	0.316	12	275	0.096
	Scholarship grant	54	65		73	46		17	102		10	109	
Medication	Never	129	145	<0.001	171	103	<0.001	27	247	0.044	19	255	0.175
	Sometimes	31	79		38	72		15	95		3	107	
	Always	2	20		5	17		6	16		0	22	
Performance course	Excellent	63	51	<0.001	81	33	<0.001	8	106	0.001	5	109	0.44
	Good	81	124		121	84		23	182		15	190	
	Bad	0	11		1	10		6	5		0	11	
	Average	18	58		11	65		11	65		2	74	
University facility	Very good	83	53	<0.001	85	51	0.001	20	116	0.434	10	126	0.674
	Bad	3	15		3	15		1	17		0	18	
	Average	68	120		94	94		18	170		9	179	
	Below average	8	56		32	32		9	55		3	61	

Emotional Exhaustion (EE), Cynicism (CC), Reduced Professional Efficacy (RPE), Maslach Burnout Inventory (MBI)

Association of quitting the course with different variables

A significant relationship was found between quitting the course and different variables, such as study level, performance, and medication intake because of studies. It was reported that about 98.1% of the undergraduate dental students in the clinical grade felt exiting from the course due to increased academic load and increased clinical requirements. The majority of the students (87.7%) never thought of leaving the course, with no medication intake history during their studies. With a history of medicine consumption during studies, 48.3% contemplated dropping out. The majority of the students (92.2%) never considered dropping out, as their performance was excellent to good. The relationship between dropping out of the course showed a statistically significant association with study level ($p<0.001$), medication consumption ($p<0.001$), and performance ($p<0.001$) (Table 3).

Table 3 Association between different variables to that of Quitting the course										
Variables		Quitting the course								p
		Sometimes		Never		Always		Total		
		n	%	n	%	n	%	n	%	
Course levels	Preclinical	47	24.1	60	38.7	13	23.2	120	29.6	<0.001
	Clinical	80	41.0	62	40.0	32	57.1	174	42.9	
	Interns/Graduates	36	18.5	26	16.8	9	16.1	71	17.5	
	Postgraduates	32	16.4	7	4.5	2	3.6	41	10.1	
Medication	Never	109	55.9	136	87.7	29	51.8	274	67.5	<0.001
	Sometimes	76	39.0	17	11.0	17	30.4	110	27.1	
	Always	10	5.1	2	1.3	10	17.9	22	5.4	
Performance In the course	Excellent	37	19.0	67	43.2	10	17.9	114	28.1	<0.001
	Good	109	55.9	76	49.0	20	35.7	205	50.5	
	Bad	0	0.0	1	0.6	10	17.9	11	2.7	
	Average	49	25.1	11	7.1	16	28.6	76	18.7	

4. DISCUSSION

The present study's findings evaluated the burnout syndrome occurrence and related sociodemographic factors relevant to students' health. The university environment can act as a stressor, and constant exposure to these environmental factors can exaggerate symptoms of burnout syndrome. A study conducted by Carver et al., (1989) reported that individual, behavioral/social, and demographic factors play a fundamental role in causing burnout, and it should be explored. Burnout syndrome was prevalent (17%) among dental students in Portugal, with a strong relationship between burnout syndrome and course achievement. Moreover, a decrease in professional efficacy was observed among male students in their studies (Campos et al., 2012). In the present study, an extremely high rate of burnout (92.8%) among dentistry students was observed, with a higher number of females showing reduced professional efficacy than male students.

A past study found that most of the students' (77.8%) performance in the course was good with financial support from the families. However, about 39.06% of the students reported consumption of medications due to stress and burnout. In addition, almost 40.34% of the students thought of exiting the course (Campos et al., 2012). In this study, more than fifty percent of students' performance was good and primarily supported by their families, and 67.5% never took medication for their stress and burnout. Furthermore, only 13.8% of students always considered quitting the course. Another study conducted by Bonafé et al., (2014) found similar findings among Brazilian dental students.

In previous research, females and younger residents showed higher stress and burnout than males and older individuals (Divaris et al., 2012; Pöhlmann et al., 2005; Bonafé et al., 2014; Eren et al., 2016). The present study findings are consistent with these studies concerning females. However, it contradicted the conclusion that younger students have high scores of burnout than older, as our research showed a high burnout among older students aged between 23-27 years than in younger ones 18-22 years. Furthermore, the Swiss dental residents had low levels of felt stress and burnout (Divaris et al., 2012), comparable to the current study, which revealed lower levels of burnout among postgraduate dental students than undergraduates. However, our study contradicted high rates of burnout among Greek postgraduate dental students (Divaris et al., 2012).

A high burnout of 26% was revealed among dental students from Turkey. In addition, the rate of burnout in terms of emotional exhaustion (25%), cynicism (18%) academic efficacy (14%) was observed (Eren et al., 2016). Clinical level students showed a higher

risk for burnout than non-clinical ones, like the present study. In addition, reduced professional efficacy scores were observed among younger students than the higher levels students (Eren et al., 2016). This contradicts the present study, which reported high scores of reduced professional efficacies among clinical and older-aged dental students. Studies on stress, burnout, and health among dental students during their clinical training reported that 10% of the dental students suffered emotional exhaustion, 17% complained of poor achievement, and 28% reported signs of extreme depersonalization (Pöhlmann et al., 2005). The present study found significantly higher emotional exhaustion among clinical students than others. These findings are supported by the survey conducted by Atalayin et al., (2015).

Sociodemographic factors influence burnout syndrome. However, females are mostly affected with burnout syndrome owing to low performance, a lack of social support, being alone, and the possibility of dropping out. These variables significantly affected burnout syndrome (Bonafé et al., 2014). In addition, students living alone showed high burnout scores during their study (Bonafé et al., 2014; Humphris et al., 2002). However, the present study contradicts these findings as high burnout scores were observed among females living with their families with adequate social support. Dental students at a private university in Northern Mexico found that burnout was present in all students who had a high-stress level. Almost 52.0% Emotional exhaustion, 42.3% depersonalization, and 17.8% reduced personal efficiency were reported. However, the overall burnout score was low among the dental students (Jiménez-Ortiz et al., 2019). Another Korean study indicated that burnout and depression were comparatively high and significantly associated with increased academic workload among senior dental students. Moreover, students facing burnout were not satisfied with their educational program (Kwak et al., 2021). This study is in line with the present study, as the preclinical level dental students showed low burnout scores than the clinical course students.

The present study results indicated that clinical levels of Saudi dental students showed high burnout. Amounts of burnout can be related to the level of courses and increased stress caused by constant contact with the patients, their clinical procedures, and the fulfillment of clinical requirements about the courses. Therefore, it is essential to remember that dental students who complain of occupational participation and stress can face burnout. Furthermore, there is an important link between burnout and variables such as performance, medication consumers, and the thought that dropping the courses could have impacted students' academic achievement.

Unlike other studies, this study also had some limitations. First, irregular and negligent students to their emails would not have had the opportunity to participate in the research. Second, the participation rate of the students was higher than the calculated minimum sample size. Third, although the collected data was adequate for the statistical analysis, the survey was carried out at one university dental school; hence, the findings cannot apply to all the dental schools in Saudi Arabia. Moreover, the information was gathered at a single point, so variables' changes cannot be assessed. Fourth, the students participated in the study voluntarily and answered questions anonymously. Despite these limitations, this study provides baseline data on the risk of burnout among dental students during their studies in Saudi Arabia. However, further extensive studies involving government dental students from different universities in Saudi Arabia are needed to confirm our study findings.

5. CONCLUSION

The increased academic workload and the cumulative stress of clinical requirements may have contributed to increased burnout among the undergraduate clinical course level students than the preclinical dental students. Dental students' sociodemographic factors played an essential role in burnout syndrome of a private University in Saudi Arabia.

Contribution

Nishath S Abdul: conception and design of the study, analysis and interpretation of data, drafting the article, final approval

Nourah A Alfozan: Acquisition of data, drafting the article, final approval

Naima A Alhumam: Acquisition of data, revising the paper, final approval

AlHanauf A Alenayaq: Interpretation of data, revising the article, final approval

Shouq M Alshehri: Acquisition of data, analysis and interpretation of dataapproval

Ethical approval

The study was approved by the research center of Riyadh Elm University (FRP/2021/1333/397/388).

Conflicts of interest

The authors declare that they have no conflict of interest.

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Data and materials availability

All data associated with this study are present in the paper.

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